

Fabrication and Manufacturing of Coronagraph Masks for The High-Contrast Imaging Test beds (CORFAB)

Completed Technology Project (2016 - 2018)



Project Introduction

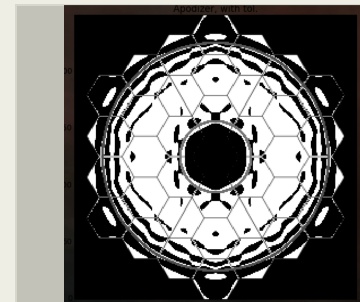
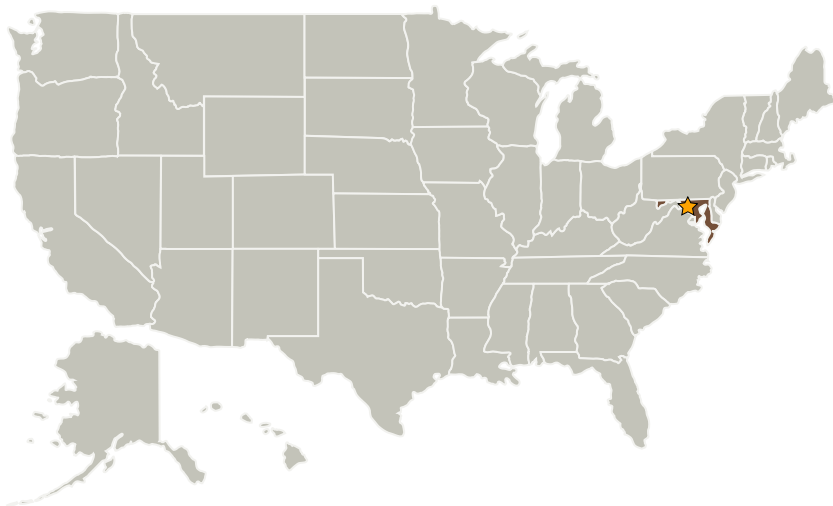
The quest to directly image exoplanets requires precisely fabricated masks to control diffraction and scattering of light in coronagraphs. In this study, we will attempt to fabricate a number of different pupil plane coronagraphic masks for use mainly in the high-contrast imaging test beds at Goddard. We will employ a combination of different techniques to achieve our goal of building the most precise and absorptive masks possible over the largest bandwidth.

Our main objective of this study is to fabricate coated series of coronagraphic pupil masks designed by our collaborator at STScI for the HiCAT test bed in addition to Lyot mask for VNC test bed. We intend to manufacture a series of Lyot masks to be used on the VNC test bed. Upon successful fabrication of masks, our collaborators at the STScI will assess the optical performance of CNT and coated pupil masks on their HiCAT test bed. Similarly, the Lyot masks will be assessed at the Goddard's VNC test bed.

Anticipated Benefits

LUVOIR, WFIRST, Exoplanetary missions

Primary U.S. Work Locations and Key Partners



, HiCAT Pupil Mask

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Organizations Performing Work	Role	Type	Location
★Goddard Space Flight Center(GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland

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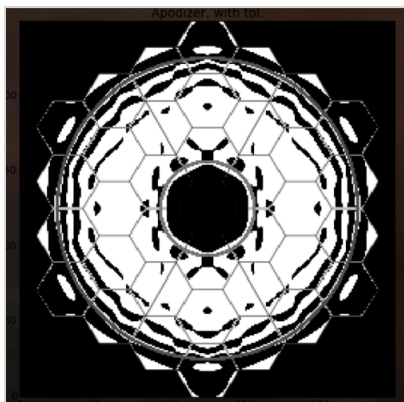
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Primary U.S. Work Locations

Maryland

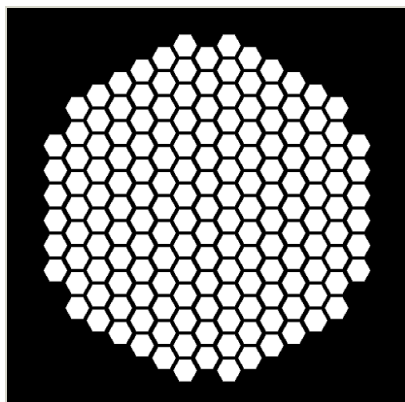
Images



HICAT Pupil Mask

, HICAT Pupil Mask

(<https://techport.nasa.gov/image/26350>)



VNC Lyot Mask

, Lyot Mask

(<https://techport.nasa.gov/image/26112>)

Project Website:

<http://aetd.gsfc.nasa.gov/>

Organizational Responsibility

Responsible Mission Directorate:

Mission Support Directorate (MSD)

Lead Center / Facility:

Goddard Space Flight Center (GSFC)

Responsible Program:

Center Independent Research & Development: GSFC IRAD

Project Management

Program Manager:

Peter M Hughes

Project Managers:

Terence A Doiron
Timothy D Beach

Principal Investigator:

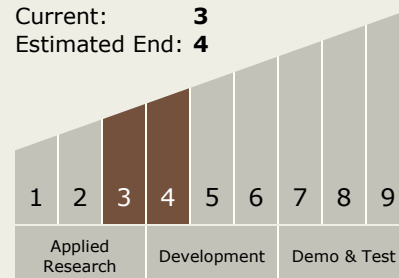
Ron S Shiri

Technology Maturity (TRL)

Start: 3

Current: 3

Estimated End: 4



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Technology Areas

Primary:

- TX08 Sensors and Instruments
 - └ TX08.1 Remote Sensing Instruments/Sensors

Target Destinations

Outside the Solar System, The Sun, Earth